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CASE REPORT

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A rare variational anatomy of the profunda femoris artery

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The course and ramification of the vessels of the lower limbs have long received attention from anatomists and surgeons. During educational dissection with undergraduate students of the Department of Anatomy of the NRI Medical College we observed in a male cadaver of about 55 years the rare variation of the profunda femoris artery originating from the medial side of the femoral artery and coursing in front of the femoral vein on the left side of thigh. The medial circumflex artery, arising by a common trunk with the profunda femoris, also coursed superficially to the femoral vein to continue further. The lateral circumflex femoral artery arose directly from the femoral artery and coursed parallel to the femoral artery on the lateral side and divided into branches. The anatomy of the profunda femoris artery on the right side was normal. It has been reported that arteriovenous fistulas can occur in the groin region as a complication of percutaneous angioplasty or cardiac catheterisation of the femoral vessels. A complete understanding of the anatomy of the femoral triangle is thus necessary in order to avoid this and other complications. (Folia Morphol 2008: 67: 157–158)

Key words: medial circumflex femoral artery, arteriovenous fistula, cardiac catheterisation

INTRODUCTION

The profunda femoris usually arises from the posterolateral aspect of the femoral artery at a distance of 3.75 cm from the midinguinal point. The medial and lateral circumflex femoral arteries normally arise from the profunda femoris. The femoral artery is easily accessible to catheterisation and thereby for investigation of any arterial system in the body. The profunda femoris artery is used for arteriography, ultrasound, Doppler imaging and magnetic resonance imaging. Several case reports on the ramification pattern and variations of both femoral and deep femoral arteries have been reported, but the variation of the profunda femoris artery arising from the medial side of femoral and passing in front of the femoral vein is rare in literature, and so this case is reported for the interest of surgeons and professionals who work with imaging.

CASE REPORT

During routine dissection with undergraduate students of the Department of Anatomy, NRI Medical College in the academic year 2006–2007 the rare variation of the profunda femoris artery originating from the medial side of femoral artery to pass in front of the femoral vein was observed on the left side of the femoral triangle in a male cadaver of about 55 years. This variation was observed as a singular variation in about 50 femoral triangles dissected over two years. At 1 cm from the inguinal ligament the profunda femoris artery and medial circumflex femoral artery arose by a common trunk.

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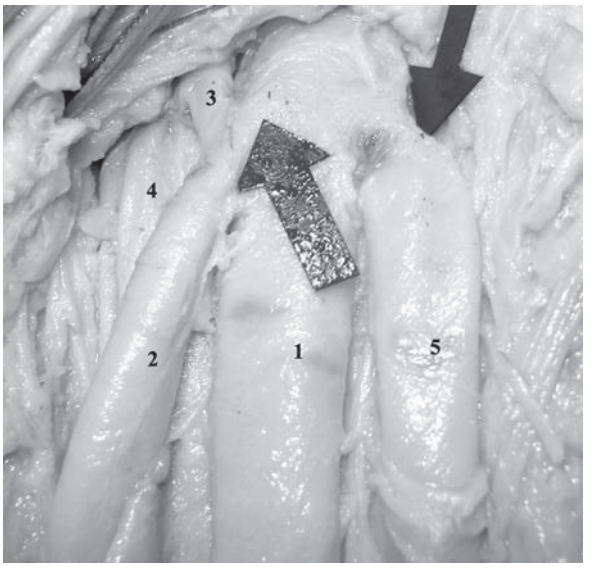

Figure 1. Profunda femoris artery passing in front of femoral vein (lt. side); 1 — femoral artery; 2 — profunda femoris artery; 3 — medial circumflex femoral artery; 4 — femoral vein; 5 — lateral circumflex femoral artery.

The profunda femoris artery passed in front of the femoral vein and reached the medial side of the femoral vein and then passed between the pectineus and adductor longus to course deeper. The medial circumflex femoral artery also passed upwards superficially to the femoral vein and then divided further. The saphenous vein entered the femoral vein after the profunda femoris artery had crossed to the medial side of the femoral artery. The lateral circumflex femoral artery also arose at the same level from the femoral artery and ran in parallel to the femoral artery on the lateral side and then divided into branches normally (Fig. 1). On the right side of the cadaver the profunda femoris arose from the posterolateral side of the femoral artery about 3 cm from the inguinal ligament and its course was normal.

DISCUSSION

The deep femoral artery passing in front of femoral vein is rare according to Bergman et al. [1]. This was reported earlier by Johnston [4], Lipshutz [5] and Siddharth et al. [8], and Sahin et al. [7] observed this variation in 1% of the dissections of 100 lower limbs. However, there has been no report of both the medial circumflex femoral and the profunda femoris artery passing in front of the femoral vein. Sahin et al. [2] have given a detailed explanation of the embryological and phylogenetic causes of the deep femoral artery passing in front of the femoral vein.

This case report is important for awareness of the apparent double puncture of the femoral artery and vein and the important complication of temporary cardiac pacing by the transfemoral approach [6]. Before catheterisation of the femoral vessels and operations in the femoral triangle high-resolution ultrasonic imaging can provide anatomical and functional information about the femoral vessels and would be of assistance in planning catheterisation [3]. This knowledge is also essential in the surgical repair of femoral hernias [4]

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